CLAIMS

1. A polypeptide having an RNase III activity, which is derived from a microorganism, and with which a dsRNA degradation product of a length within a specific range that is effective for RNA interference can be obtained after complete degradation.

2. A polypeptide having an RNase III activity, for which reaction conditions can be readily controlled, and with which a dsRNA degradation product of a length within a specific range larger than a final degradation product obtained by treating a dsRNA with an RNase III from *Escherichia coli* can be obtained.

3. A polypeptide having an RNase III activity, of which the dsRNA degradation velocity is slower than the dsRNA degradation velocity of an RNase III from *Escherichia coli*, and for which reaction conditions can be readily controlled.

4. A polypeptide having an RNase III activity, of which the dsRNA degradation velocity is slower than the dsRNA degradation velocity of an RNase III from *Escherichia coli*, for which reaction conditions can be readily controlled, and which does not tend to produce a small dsRNA degradation product of about 10 base pairs.

5. The polypeptide according to any one of

claims 1 to 4, which is derived from a cold-adapted microorganism.

6. The polypeptide according to claim 5, wherein the cold-adapted microorganism is a microorganism of the genus *Shewanella*.

7. A polypeptide having an RNase III activity, with which a dsRNA degradation product of a length within a specific range larger than a final degradation product obtained by treating a dsRNA with an RNase III from *Escherichia coli* can be obtained, and which contains an amino acid sequence selected from the group consisting of:

(a) the amino acid sequence of SEQ ID NO:4;

(b) an amino acid sequence in which one or several amino acid(s) is(are) substituted, deleted, inserted or added in the amino acid sequence of SEQ ID NO:4; and

(c) an amino acid sequence encoded by a nucleotide sequence that is capable of hybridizing to the nucleotide sequence of SEQ ID NO:1 under stringent conditions.

8. The polypeptide according to any one of claims 1 to 7, which is a fusion protein with a protein having an activity of binding to a nucleic acid.

9. A method for degrading a dsRNA, the method comprising allowing the polypeptide defined by any one of

claims 1 to 8 to act on a dsRNA.

10. The method according to claim 9, wherein the dsRNA degradation product is a dsRNA that is capable of functioning in RNA interference as an siRNA.

11. The method according to claim 9 or 10, which is conducted in the presence of a protein having an activity of binding to a nucleic acid.

12. The method according to claim 11, wherein the protein having an activity of binding to a nucleic acid is a cold shock protein derived from a thermophilic bacterium or a thermostable bacterium.

13. The method according to claim 12, wherein the cold shock protein is cold shock protein B from *Thermotoga maritima*.

14. A composition for degrading a dsRNA, which is used for the method defined by any one of claims 9 to 13, and which contains the polypeptide having an RNase III activity defined by any one of claims 1 to 8.

15. A kit for degrading a dsRNA, which is used for the method defined by any one of claims 9 to 13, and which contains the polypeptide having an RNase III activity defined by any one of claims 1 to 8.

16. A nucleic acid that encodes a polypeptide having an RNase III activity, which has a nucleotide sequence selected from the group consisting of:

(a) the nucleotide sequence of SEQ ID NO:1;

(b) a nucleotide sequence in which one or several nucleotide(s) is(are) substituted, deleted, inserted or added in the nucleotide sequence of SEQ ID NO:1; and

(c) a nucleotide sequence that is capable of hybridizing to the nucleotide sequence of SEQ ID NO:1 under stringent conditions.

17. A method for producing a polypeptide having an RNase III activity, the method comprising culturing a host cell containing the nucleic acid defined by claim 16, and collecting a polypeptide having an RNase III activity from the culture.